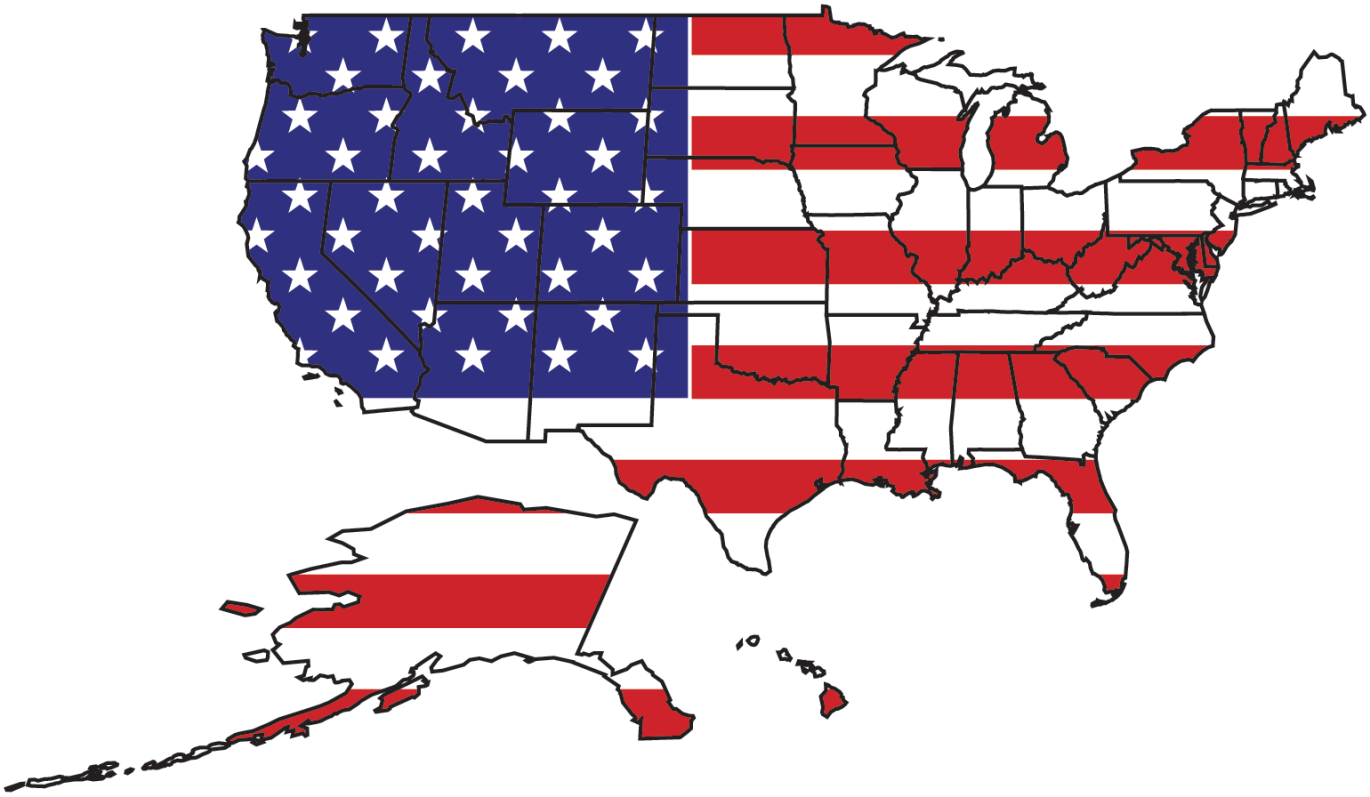
MAPdataUSA 3

The affordable map base



AVENZA MAPdata USA Tutorial Guide

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Welcome

Avenza welcomes you to mapmaking in the 21st century!

Combined with Adobe Illustrator, MAPublisher has revolutionized the art of mapmaking by allowing spatial data files to be used to create maps inside a vector graphics program. MAPublisher allows all your cartographic tasks to be performed where they should be done; in a powerful graphics environment.

MAPdata USA allows users of MAPublisher to create projects using data from all the all counties in the United States, Puerto Rico, American Samoa, Guam, US Virgin Islands and North Marianas Islands.

This tutorial manual assumes that the user is familiar with Adobe Illustrator CS2, CS3, and has at least a basic understanding of geographic information systems (GIS) terminology and concepts. The exercises in this manual should be used in conjunction with the MAPublisher 7 User Guide.

By following these tutorials you will learn how to import, reproject and stylize the MAPdata USA data. This will show the user the basics of creating maps using MAPublisher in Adobe Illustrator. Together MAPublisher and Adobe Illustrator will give you a totally integrated cartographic design software system with graphics tools and geographic functions present in the same work environment.

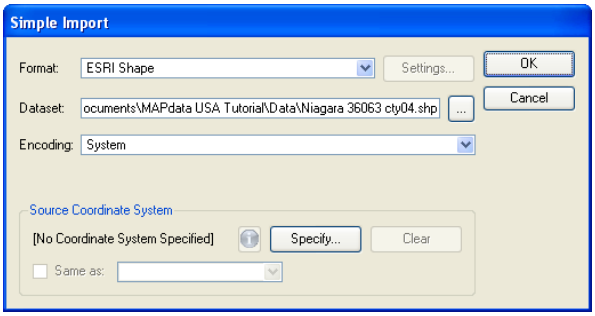
TUTORIAL DATA

All the exercises in this guide will use GIS data supplied in the Tutorial Data folder on your MAPdata USA CD or in the electronic download. The data used in this guide is a sample from the MAPdata Canada package.

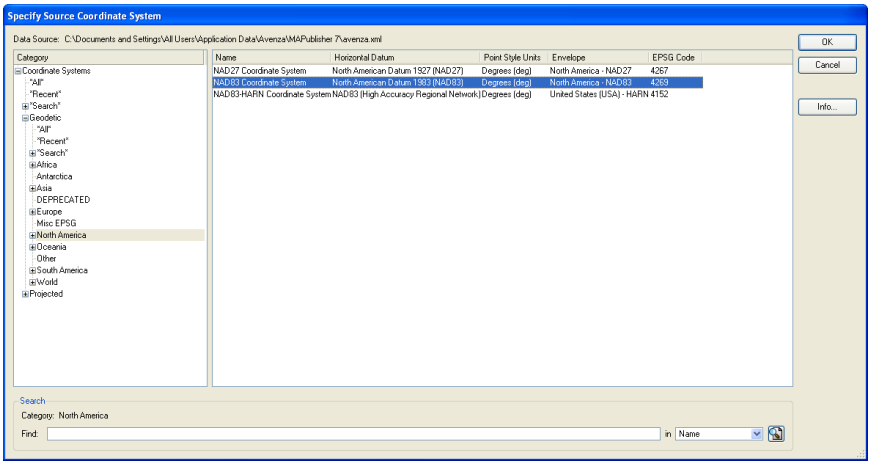
Importing MAP Data

1-i: IMPORTING MAPDATA USA FILES

1. Start by creating a new Illustrator page in landscape orientation=lettersize
2. Select *File > Import Map Data > Simple…* to open the MAPublisher Simple Import dialog
3. Select **ESRI Shape** from the **Format** dropdown
4. Click the '...' (Browse) button to open the data source browser
5. Locate and select the following data in the **MAPdata USA Tutorial folder** and click Open:
   Niagara 36063 cty04.shp, Niagara 36063 rds-j.shp, Niagara 36063 rls.shp, Niagara 36063 ua.shp, Niagara 36063 wal-j.shp, Niagara 36063 wap.shp



6. Note the **Source Coordinate System** is currently undetected. This can be set at this point in the process or after the data has been imported. To set the Source Coordinate System in the Import dialogue click the **Specify** button
7. The Specify Source Coordinate System dialogue will open. To set the correct coordinate system for MAPdata USA please navigate to the following location in the dialogue:
   Coordinate Systems > Geodetic > North America > NAD83 Coordinate System



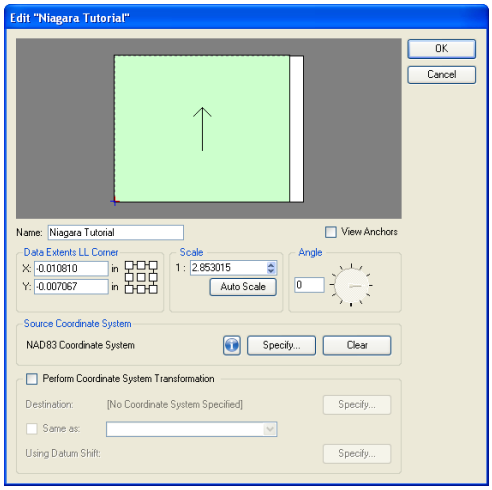
MAPublisher Tip: The source coordinate system is the coordinate system associated with the data in it's current state. This information is derived either from the data itself or may be obtained and assigned manually. Always obtain this information from your data provider.

8. Click OK in the Specify Source Coordinate System dialogue to confirm the coordinate system
9. Click OK in the Simple Import dialogue to import the data
   The Simple Import dialog closes and the selected map files are imported. The map has been imported to automatically fit to the size of the page
10. Open the layers palette and ensure that the area layers are on the bottom and the line layers are on top of the illustrator layer hierarchy
11. Notice that there is one new data layer in the Illustrator Layers palette for every imported file. There is also a MAP Views palette under which all the imported data layers reside.
12. To open the MAP View Palette go to Window > MAPublisher Palettes > MAP Views. See more on MAP Views on page 53 in the MAPublisher User Manual or contact Avenza Support (http://www.avenza.com/support.html)

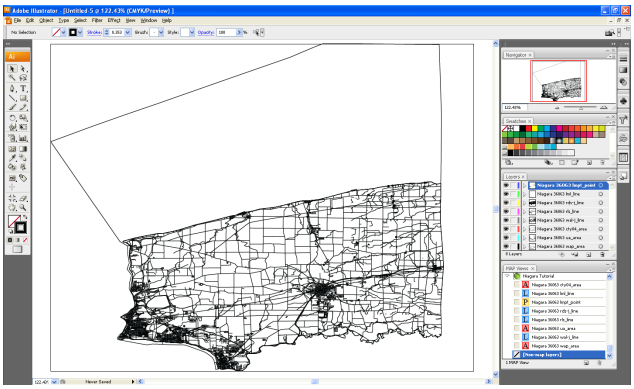
Projecting your data

2-i: COORDINATE SYSTEM TRANSFORMATIONS

1. The data has now been imported and it is ready to be projected. To do this double click on the MAP View that holds the newly imported data and your MAP View Editor will open.
2. Rename your MAP View by entering "Niagara Tutorial"
3. In the MAP View Editor there is a section for the Source Coordinate System where you can specify or change it. This can be used if the coordinate system was not set when importing the data or it needs to be changed. Leave this for now as this has already been set.
4. To project your data from its current unprojected coordinate system (NAD83) to a projected coordinate system enable the **Perform Coordinate System Transformation** checkbox

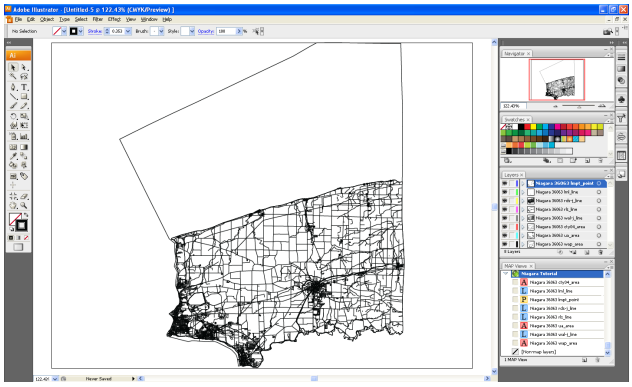


5. In the Perform Coordinate System Transformation section select the **Specify** button.
6. The Specify Destination Coordinate System dialogue will open. The destination coordinate system depends on your mapping purposes. For this exercise please navigate to the following location in the dialogue:
   Coordinate Systems > Projected > US-State Plane NAD83 > NAD83 (ftUS) > NAD83 New York West (ftUS)
   Note: This coordinate system will not work for all MAPdata USA data as it is specific to a specific State Plane.
7. Click OK in the Specify Destination Coordinate System dialogue and then again in the MAP View Editor. The data will now be projected into ***NAD83 New York West (ftUS)***



Data unprojected in NAD83 Coordinate System

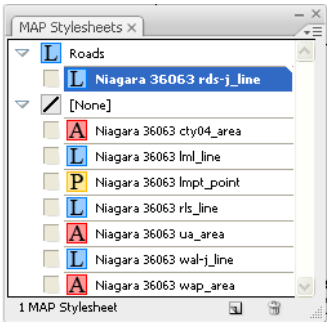
Data projected in NAD83 New York West (ftUS)



Applying Stylesheets to your data

3-i: APPLYING STYLESHEETS TO YOUR ROADS

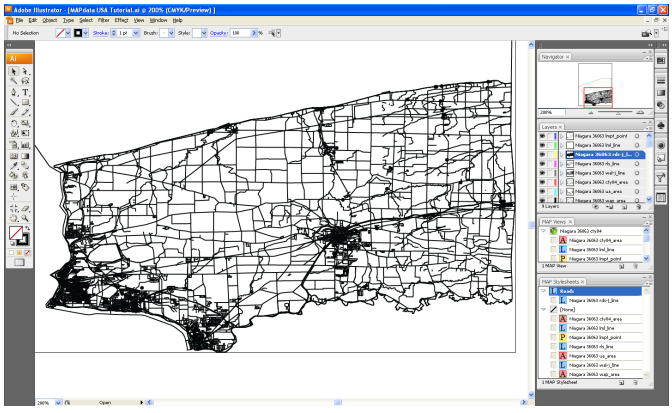
1. The Graphic Styles needed for this exercise will have to be loaded before the next step. To do this go to *Window* > *Graphic Styles*. Now go to *Open Graphic Style Library* > *Other Library...* Browse to the Tutorial folder and select the graphic styles.ai file
2. When the new graphic style palette (with the imported styles) opens, shift select them all and drag them into the Graphic Styles palette
3. Go to Window > MAPublisher Palettes > MAP Stylesheets to open the Stylesheets palette
4. Click on the "Create New MAP Stylesheet" button at the bottom of the palette and call it "Road" with a feature type of Line
5. To stylize data in this stylesheet drag the Niagara 36063 rds-j_line layer into the Road stylesheet and double click on the Road Stylesheet



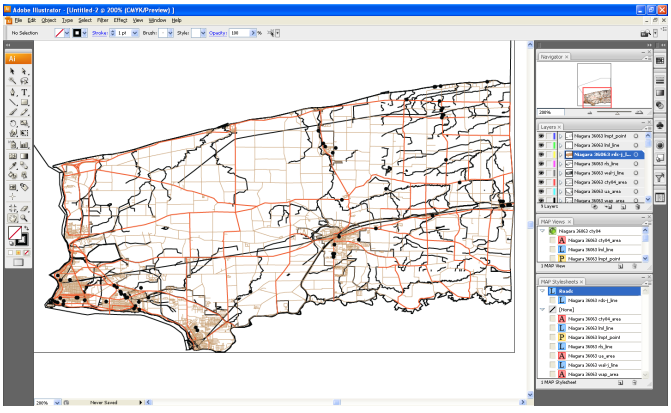
6. Click on the Add button to add the first rule. Change the name of this rule from 'Rule 1' to 'Highway'. Use the "Highway" Graphic Style that was added in step 1 as the style for this rule.
7. Select the "Highway" style from the style dropdown list.
8. Click on the advanced expression option and then select the expression drop down and the browse button
9. In the Edit Expression window click on the expand Expression Components and then double click on the "***FIRST_CFCC***" attribute column heading found in the "Objects" list followed by "=" which is a button located on the top of the dialogue. In the description window select "Display Unique Values" and select "***A11***"
10. Following this expression click on "***OR***". Finish the expression to match the following:
FIRST_CFCC= "A11" OR FIRST_CFCC= "A15" OR FIRST_CFCC= "A21" OR FIRST_CFCC= "A31"
10. Click OK in the Edit Expression window
11. Now add rule 2 and call it Streets using the Graphic Style "Streets"
12. In the Edit Expression window double click on the "***FIRST_CFCC***" attribute column heading followed by "=". In the description window select "Display Unique Values" and select "***A41***"
13. Following this expression click on "***OR***". Finish the expression to match the following:
FIRST_CFCC= "A41" OR FIRST_CFCC= "A63" OR FIRST_CFCC= "A74" OR FIRST_CFCC= "P41"
14. Click OK in the Edit Expression window and in the Edit Stylesheet window

This will apply the select graphic styles to the requested attributes

Roads before MAP Stylesheets



Roads after MAP Stylesheets

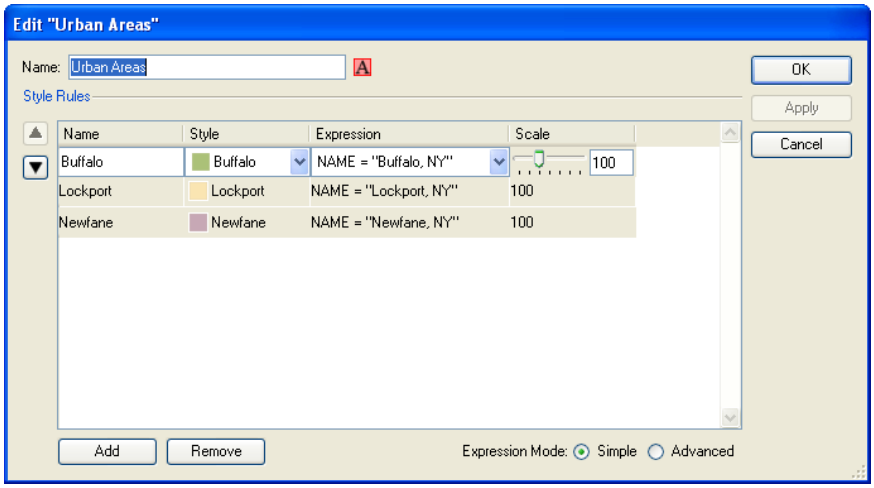


3-ii: APPLYING STYLESHEETS TO YOUR RAILWAYS

1. Click on the “Create MAP Stylesheet” button and call it “Railway” with a feature type of Line
2. To stylize data in this stylesheet drag the Niagara 36063 rls_line layer into the Railway stylesheet and double click on the Railway Stylesheet
3. Click on the add button to add a rule. This rule will be called Railway and it will use the “Rail Lines” Graphic Style
4. In simple expression mode click on the expression drop down menu and create the following expression: ***CCFC= “B11”***
5. Click OK in the Edit Expression window and in the Edit Stylesheet window

3-iii: APPLYING STYLESHEETS TO YOUR URBAN AREAS

1. Click on the “Create MAP Stylesheet” button and call it “Urban Areas” with a feature type of Area
2. To stylize data in this stylesheet drag the Niagara 36063 ua_area layer into the Urban Area stylesheet and double click on the Stylesheet
3. Click on the add button to add a rule. This rule will be called “Buffalo” and it will use the “Buffalo” Graphic Style
4. In simple expression mode click on the expression drop down menu and create the following expression: ***COUNTY = “36063”***
5. Click OK in the Edit Stylesheet window



Applying Graphic Styles to your data

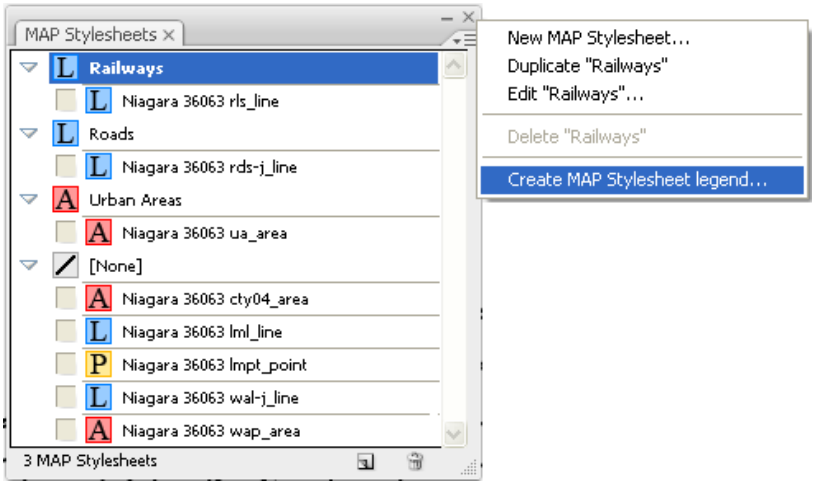
4-i: APPLYING GRAPHIC STYLES WATER AND BOUNDARY

1. Select the entire water layer (Niagara 36063 wap_area & Niagara 36063 wal-j_line) and ensure that you have selected the fill in the Illustrator tool bar.
2. Open the swatch palette and select a blue colour for the fill.
3. Select the stroke in the Illustrator tool bar and select “none” so there is no stroke.
4. Perform the same task for the boundary layer (Niagara 36063 cty04_area) replacing the blue with a dull yellow

Creating Legends and Scale Bars

5-i: PRODUCING A LEGEND FROM YOUR STYLESHEETS

1. Create a new layer called “Legend”
2. Drag this layer into your MAP View and assign it a feature type of Legend
3. Select one of the Stylesheets in order to export to a legend
4. Click on the options button in the MAP Stylesheets palette and select “Create MAP Stylesheet Legend”
5. Select the target layer as the Legend layer created in Step 1
6. The MAP Stylesheet legend will be placed in the lower left corner of your page
7. This object can be ungrouped and modified if needed. To do this select the object and ungroup twice



5-ii: PRODUCING A SCALE BAR

1. Create a new Illustrator layer and rename it ***Scale Bar***.
2. In the MAP Views palette, drag the ***Scale Bar*** layer to the ***Niagara Tutorial*** MAP View, setting the Feature Type to Legend
3. Set your desired font and font size using the Illustrator Character palette. For this example use an 8 pt font.
4. Open the MAPublisher Scale Bar filter by going to Filter > MAP Legend > Scale Bar
5. Choose a desired scale bar style using the Previous and Next buttons
6. Set the Advanced Options as follows:
7. Set the Units dropdown list to ***Miles***
8. Enter a Label Interval of ***5*** miles
9. Set the Number of Labeled Intervals to ***5***
10. Set the Number of Intervals to Subdivide to ***1***, and the Number of Sub-intervals to ***5***
    These settings will create a scale bar that represents a total distance of 25 miles, has 4 main cells each representing 5 miles and where the first cell is further divided into 5 smaller cells
13. Set the Label Options as follows:
14. Select the ***Display Scale value as above***
15. Select the ***Display page to map units ratio*** checkbox
16. Set the Page Units dropdown list to ***Inches***
17. Select the ***Display units to right of last interval label*** checkbox. These settings will create a scale bar with caption labels placed accordingly
18. Click OK to create the scale bar. The Scale Bar will be placed on the page according to the defined settings

Labelling your data

6-i: GENERATING LABELS FOR AN LINE LAYER USING FEATURE TEXT LABEL

1. Create a new layer in your Illustrator Layers palette and name this layer ***Road Names***. Then drag this new layer into the 'Niagara Tutorial' MAP View, setting the feature type to Text.
2. Select a font and text size (8 pt recommended) for the labels you want to create using the Illustrator Character Palette
3. Using the MAP Selection Filter, select the roads to label. A selection filter is used to select data based on an attribute. Making sure the Niagara 36063 rds-j_line is selected, go to Window > MAPublisher Palettes > Selection Filters to open the MAP Selection Filters dialog.
4. Click on the "Create New Selection Filter" button at the bottom of the palette. This filter can be named "Roads" in the Name entry box.

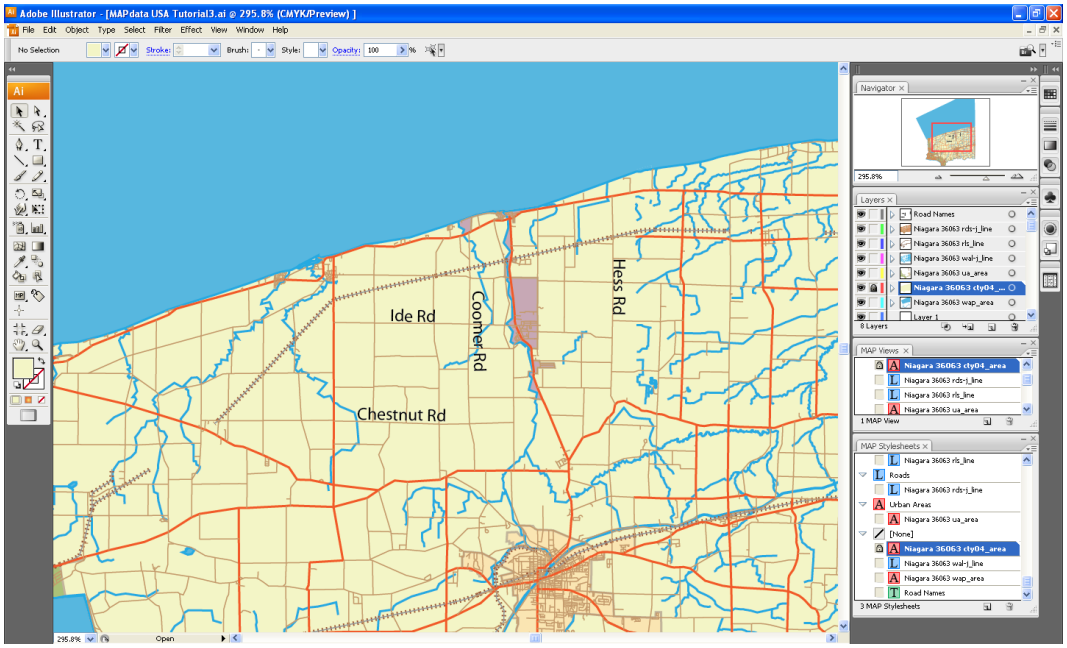
   *Data does **NOT** have to be selected using selection filters, you may use manual selection as well. For the purpose of this exercise selection filters are used to locate the specific roads to label. You may select based on groups such as road class, or in this case via individual names.*

5. Click on the Browse button then click the dropdown button to expand the Expression Components.
6. Double click on the FIRST_FENA column heading in the Objects under Niagara 36063 rds-j_line so that it is entered into the expression entry box. Click on the ' = ' button and select "Display Unique Values" in the description section. Select "Chestnut Rd" from the list.
7. Now select the "OR" function and repeat step 6 3x by inserting "Hess Rd", "Ide Rd", and "Coomer Rd" for the road name. The finished expression should read as follows:
   FIRST_FENA= "Chestnut Rd" OR FIRST_FENA= "Hess Rd" OR FIRST_FENA= "Ide Rd" OR FIRST_FENA= "Coomer Rd"
8. Click OK twice.
9. The requested roads should now be selected. To re-select the data click on the Apply as New Selection button to perform the selection.
10. Go to Filter > MAP Legend > Feature Text Label.
11. In the Feature Text Label Dialog box you must first set the options for MAPublisher to determine the attributes that will be converted to labels. The Source Layer list will show the Line layer containing the selected data.
12. The Column dropdown will be populated with the attribute structure of that layer. Set the Column dropdown list to whichever column you wish to draw the labels from. For this example, choose ***FIRST_FENA.*** This column contains the name of every road in the selected MAP Layer.
13. Set the text layer to output the labels to. For this example choose the ***Road Names*** layer.

Continued on the next page ➔

6-i: GENERATING LABELS FOR AN LINE LAYER USING FEATURE TEXT LABEL - Con't

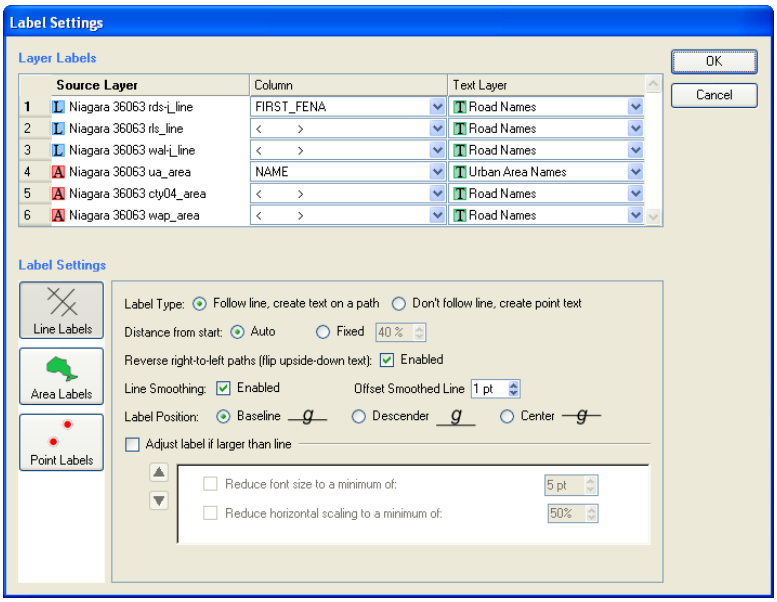
14. In label setting we can specify label preferences such as label position, alignment to lines of latitude, minimum font sizes and horizontal scaling to best place labels within polygons and paths. MAPublisher will place Line labels intelligently, depending on the curvature and length of the line. Click the Line Labels button on the left to assign MAPublisher Line Label Settings.
15. The Label Type option will allow you to specify how you would like the text placed on the Map. The "Follow line" option will place text to the orientation of the line and the "Don't follow line" option will place all text horizontally on the page. Enable the "Follow Line, Create Text on a Path" option.
16. The Distance from Start option will allow you to specify where along the line you would like the label. Lets choose Auto and let MAPublisher place the text at the midpoint for straight lines. For curved lines this will find the smoothest portion of the curved line closed to the midpoint. Enable this option.
17. By enabling Flip upside-down labels MAPublisher will automatically orient labels correctly, so lets leave this option enabled.
18. By checking the Line Smoothing option, MAPublisher will create a smoothed path for each text object in the selected Text layer, and place the text along this path at the specified Offset value. The labels can then be dragged and positioned at any position along a line. For this example leave it unchecked because the streets are very linear.
19. The Label Position option allows you to select the vertical position of the labels relative to the line. Three options are available for the vertical positioning of text labels: Baseline, Descender, and Center. Select Descender to place the labels on top of the generated text path.
20. Labels can be modified if they exceed the length of the line in the current default font size. First check the Adjust label if larger than line option to activate the label 'rules'. The order for the rules can be changed by clicking on the rule and then pressing the Up or Down button. Checking the Reduce font size option will allow you to reduce the size of the font to a specified minimum size in points. We can select 3 for this exercise.
21. Checking Reduce horizontal scaling will allow text to be scaled down horizontally by the percentage specified. Leave this at 50%.
22. Click OK.
23. The roads that were previously selected have now been labeled.

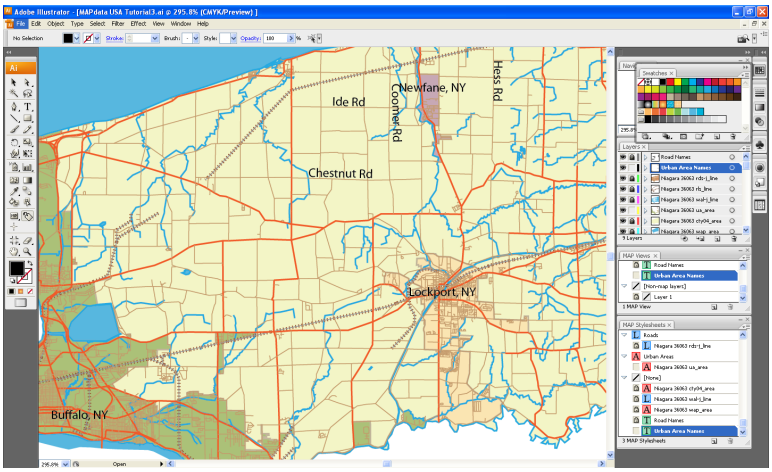


Labelled roads using Feature Text Label

6-ii: GENERATING LABELS FOR AN AREA LAYER USING THE MAP TAGGER TOOL

1. Create a new layer in your Illustrator Layers palette and name this layer ‘Urban Area Names’. Then drag this new layer into the ‘Niagara Tutorial’ MAP View, setting the feature type to Text.
2. Select a font and text size (10 pt recommended) for the labels you want to create.
3. Click on the MAP Tagger Tool button in the Adobe Illustrator Tools palette to open the Tagger Tool dialog.
4. Similar to the feature text label in the previous example, in the Text Dialog box you must first set the options for MAPublisher to determine the attributes that will be converted to labels. The Source Layer list will show the Area, Point and/or Text layers currently containing selected data.
5. For each layer, the Column dropdown(s) will be populated with the attribute structure of that layer. Set the Column dropdown list to whichever column you wish to draw the labels from. For this example, choose ‘Niagara 36063 ua_area’.
   This column contains the name of everyurban area in the selected MAP Layer.
6. Set the text layer to output the labels to. For this example choose the ‘Urban Area Names’ layer.
7. Click OK.
8. With the MAP Tagger icon, click on any feature you wish to label.





Labelled places using the MAP Tagger Tool